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Iterative methods for solving variational inequalities of the theory of soft shells

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Abstract

© 2014, Pleiades Publishing, Ltd. The convergence of iterative methods for solving variational inequalities with monotone-type operators in Banach spaces is studied. Such inequalities arise in the description of deformation processes of soft rotational network shells. Certain properties of these operators, such as coercivity, potentiality, bounded Lipschitz continuity, pseudomonotonicity, and inverse strong monotonicity, are determined. An iterative method for solving these variational inequalities is proposed, its convergence is investigated, and the boundedness of the iterative sequence is proved. Moreover, it is proved that any weakly convergent subsequence of the iterative sequence converges to a solution of the original variational inequality.

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Keywords

iterative method, potential operator, pseudomonotone operator, soft network shell, variational inequality